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# Requirements for Admission to Medical Schools

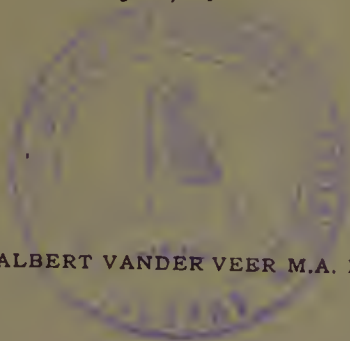
INCLUDING THE

Combined Baccalaureate and Medical Course

A PAPER DELIVERED AT THE 40TH

## UNIVERSITY CONVOCATION

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REQUIREMENTS FOR ADMISSION TO MEDICAL SCHOOLS,  
INCLUDING THE COMBINED BACCALAUREATE AND  
MEDICAL COURSE

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Having lived long enough to witness the great progress that has been made in medical education in this State, I am profoundly grateful for the opportunity that presents itself to me at this time to review this subject somewhat briefly. I believe the discussion on which we are now about to enter will result ultimately some years hence in establishing between the institutions granting baccalaureate degrees and the independent medical schools a more harmonious action, all of which will result to the benefit of the medical profession. I am profoundly grateful that it is my privilege and pleasure to convey to those of you who are here as citizens of the State of New York the pleasant experiences that I have in mind of the kind things that have been said about the laws of the State of New York in reference to medical education, as I have heard them in our national associations, in our associations of American surgeons and of American physicians, in short wherever I have gone throughout the United States. So, as I say, these are pleasant moments for me, coming as I do from active life to discharge a duty which I realize perhaps would be better discharged by some other, some one more conversant with this line of work.

In the brief address I am to present on the subject of "Requirements for Admission to Medical Colleges, etc.," it is not out of place for me to take into consideration the condition that existed a little more than four decades past, occupying but a few moments in retrospection. Then, any young man who felt a desire to enter the ranks of the medical profession could, without a college or high school education, leave the counting-room, the warehouse or farm, register with some accredited physician, matriculate with his chosen medical school, and take his chances of final graduation.

Even at that time the faculty of more than one college discussed for some time the proper course to pursue in order to

keep from entering on the study of medicine the illiterate and totally unprepared young man, who, even in the very lax days of final requirements, regarding strict examinations, etc., would inevitably fail. It became a source of sadness and humiliation to be obliged to tell him, at the end of his two years work, that he was not properly fitted even to enter on the study of medicine. It then became necessary for him either to begin anew his studies for preparation, or go to some other state, some other institution, that would grant him a diploma without any compunctions of conscience or thought as to his future professional career. This finally ended in some colleges in this State voluntarily introducing a preliminary examination, which had a marked effect in diminishing the number of students attending well regulated schools, but elevated the standard of work accomplished.

Instruction in medical colleges at that time consisted of a two years course of from 14 to 20 weeks each year and three years registration with a preceptor. Some institutions endeavored to give even these two courses in one year, but this was too flagrant an exhibition of commercialism, and the college persisting in this method was subjected to severe criticism.

After the close of the Civil War a marked agitation was apparent throughout this and a few of the eastern states, in reference to the preparation of medical students, and the term was finally extended to a minimum of 20, not above 24, weeks in one year, the student being required to attend two full courses in two separate years. This was increased to three years soon after, and, finally, laws were enacted requiring a four years course of from six to nine months of lectures each calendar year.

When you consider that this increase of requirements, on the part of the student who was about to enter on the study of medicine, was almost entirely brought about within the ranks of the medical profession, and that most medical colleges joined heartily in this move, though, as is well known, they were not endowed, but their income derived entirely from the number

of students who matriculated, it certainly reflects great credit on the profession of medicine, in that they exhibited such an earnest desire to elevate the standard of medical education.

Along with the increase in requirements for medical students, the profession moved in a solid front for the enactment of a law organizing state medical examining boards, so that the work of the colleges could be justly graded, giving the possessor of a diploma only the privilege of applying for examination before the State board when desiring to enter on the practice of medicine in this State. This has had a most salutary effect in elevating the standards of our profession.

Few commonwealths have on their statute books better laws than those that are now enforced in this State, and all this is largely due to the efforts of the medical profession itself. It is proper that the State should exercise the right of deciding who shall practise so important a profession as that of medicine and surgery and should control all requirements.

While the smallest hamlet has the right to demand the best that the State can afford, yet it is possible that it can not always command the same for lack of adequate remuneration; however, this should not be taken into consideration when applied to the medical student, or to the discharge of so important a profession as that of medicine.

It is interesting to look into this subject carefully and study the various suggestions that have led up to the present status of affairs. Fortunately for the public, fortunately for the ambitious young man in this State, who desires to enter the profession of medicine, a standard is now in operation, which is yielding fairly good results, and of this it might be well for us to speak.

There are two methods in this State whereby a student may enter a medical school, i. e. by holding a high school certificate, or having completed studies equivalent, which will obtain a medical student certificate, or by being a graduate possessing a baccalaureate degree.

The high school graduate, holding his certificate, can now enter a medical college, and continue his work, graduating at

the end of four years, providing he is able to pass all of his examinations, while another class of students enter through their diplomas of graduation, or baccalaureate degree. The former course is reached, say at the age of 19. The man pursues his four years in a medical college, and graduates at the age of 23. He may take his two years hospital instruction and at the age of 25 is ready to enter on the practice of his profession.

The man who has secured his baccalaureate degree can hardly obtain it under the age of 22. Add to this his three or four years medical course, the two years of hospital practice, and he reaches the age of 27 or 28 before he is ready to enter on real practice.

Here is presented a condition that really seems to work to the disadvantage of the graduate from a literary college, but, when we look into the statistics, and study the subject, we learn that universities have endeavored to give to the fourth year student, in his academic course, a line of study comprising such branches as are taught in the medical colleges in the first of the four years course, thus enabling him to secure his combined course in seven years, by giving him a credit of one year. The question is being agitated regarding the enforcement of a law compelling the student to secure a baccalaureate degree before entering on the study of medicine. It is scarcely possible that such a law would be passed by our Legislature, but it is eminently desirable that such arrangements be made with our universities as will enable the fourth year of study in a literary college to be so planned that it will be counted for the first year in the medical school.

I am frank to state that I believe there must be marked concession on the part of each institution. Universities that can enable their students to complete a satisfactory course in four years must plan the final year in their curriculum so as to comprise the important study of anatomy, as it is now taught in the first of the four years course in the medical colleges, in addition to other branches that can more easily be arranged.



In registering college courses for the allowance of one year in term of study for admission to medical schools, such courses should either include the studies that usually constitute the work of the first medical year, or some training in general biology, physics, and chemistry, Latin, French or German. One modern language should be required, either French or German, though Spanish or Italian may be substituted if necessary.

Let us look somewhat carefully into the statistics collected in the Regents office. A careful study of the combined baccalaureate and medical courses of 34 representative universities with medical departments or affiliated schools, found in 28 political divisions of the United States, based on college courses whose degrees meet the minimum requirements of the Court of Appeals and whose medical courses are four years in length, gives the following results:

The bachelor of arts degree from 28 of the institutions requires seven years for its completion after eight years of pre-academic preparation for admission; three require six; one requires five; two are unknown. Two medical schools require for admission the completion of a grammar school course; 11 a one year high school; four, two years; five, three years; seven, four years; one, one year of college; one, two years of college; one, three years of college; one, a bachelor's degree; one, a bachelor's degree with specific sciences.

The college courses of the 34 institutions were four years in length. Of the medical schools, 31 had four year courses; three, had two year. In 31 institutions the combined college and medical course was seven years in length; in three, six years.

Passing over the baccalaureate subjects to those that can be grouped as medical, the first medical year of 27 schools gave an average of 364 hours to anatomy, including such terms as angiology, microscopic anatomy, myology, osteology, splanchnology, syndesmology. Twenty five schools gave an average of 192 hours to biology, including botany, embryology, histology, microscopy; 27 schools gave an average of 218 hours to chemistry, including organic, inorganic, analysis (qualitative and

quantitative), physiologic chemistry, toxicology, and urinalysis. Ten schools gave an average of 98 hours to physics, and several institutions included the subject, but did not give exact information regarding the time devoted to the subject; 23 schools gave an average of 124 hours to physiology. These averages aggregate 996 hours for the five subjects.

In the first four years of the combined courses, the following average number of hours were given the same subjects, viz, anatomy, 196; biology, 159; chemistry, 179; physics, 184; physiology, 101; total 819 hours.

The following table will present these subjects for comparison by first medical year and combined baccalaureate course.

FIRST MEDICAL YEAR		COMBINED BACCALAUREATE COURSE
Anatomy	364 hours	196 hours
Biology	192 "	159 "
Chemistry	218 "	179 "
Physics	98 "	184 "
Physiology	124 "	101 "

A careful comparison of the results of this study with the recommendations of the American Association of Medical Faculties at its June meeting in 1899 suggests the following.

The minimum requirement of a medical year should presuppose 15 hours a week for 40 weeks—600 hours. For registration purposes there should be 750 hours of instruction and 150 hours of laboratory, practical and dissection, each of these 150 laboratory hours to require two hours time. The time should be distributed somewhat as follows:

	INSTRUCTION	LABORATORY
Anatomy	200 hours	At least 80 hours
Biologic sciences	150 "	" 60 "
Chemistry	150 "	" 60 "
Physics	150 "	" 60 "
Physiology	100 "	" 40 "
	<hr/> 750 "	<hr/> 300 (150 hours)



In comparison with this table may be considered the following requirements of Johns Hopkins, the only university of the United States that requires the baccalaureate degree for admission, including certain specific sciences.

In the sophomore year, chemistry 281 hours; English 94 hours; German 125 hours; physics 219 hours.

In the junior year, biology 281 hours; chemistry 281 hours; English 94 hours; French 125 hours.

In the senior year, biology 281 hours; history 125 hours; philosophy 156 hours.

In the first year of the medical school, anatomy 681 hours; chemistry 152 hours; philosophy 72 hours.

The requirements of Johns Hopkins then become

Anatomy	681	hours
Biologic sciences	562	"
Chemistry	714	"
English	188	"
French	125	"
German	125	"
History	125	"
Physics	219	"
Philosophy	228	"
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	2967	"

Using the experience of Johns Hopkins as a guide, it would be safe to relegate the physics and part of the chemistry to the sophomore year; chemistry and part of the biologic sciences to the junior year; the remaining biologic sciences, anatomy and physiology to the senior year.

The law recently passed by the Legislature to allow a student possessing a baccalaureate degree to complete his medical education in three years will fail to accomplish its purpose if all baccalaureate degrees are to be recognized because of the very excellent four years course that is now offered by the medical colleges in this State. The first year comprises so much anatomy, chemistry and physiology that a

portion of it is not taught at all in some of the literary colleges, or is given in such a manner that it would be impossible for the student to enter a medical college in the second year.

As I have stated, the colleges granting a baccalaureate degree, and expecting their students to enter a medical college, will have to rearrange their curriculum so as to aid the student who has this course in mind, in a more advantageous manner in the future than they have in the past.

Again, I am of the opinion that many of our medical colleges will continue to have their ranks recruited largely from high schools granting a medical student certificate, and that these men will enter the profession of medicine, perform their duties thoroughly well, and meet the commendation and encouragement of the public at large.

One can not deny that a three years medical course based on a satisfactory four years college course is preferable to a four years medical course based on a high school certificate, but, as I have stated, the course will need to be very decidedly changed in the fourth year in the institution granting a baccalaureate degree. Then, again, it will not be possible for many years to come so to elevate the standard of preparation for medical students as to eliminate a class of young men who can secure only a high school certificate, and a large majority of the medical institutions will continue to accept these certificates. The greatest embarrassment that presents itself today, in the effort to bring into our medical colleges a class of students whose preparation is such as is absolutely required for a proper understanding of the subjects taught, is that the medical course can not be made elective. To a great degree it is fixed, and the instruction is such that it can not be deviated from. Herein lies the weakness of the institutions granting baccalaureate degrees. They have not as yet entered on the higher plane of instruction in which the medical colleges have been leading.

Furthermore, I am convinced that seven years for the combined baccalaureate and medical courses represents the highest practicable standard for those students of medicine that are able

to take college work, and that this fact will be generally admitted as time goes on.

In 19 departments of universities both baccalaureate and medical degrees are now obtained on three years in the baccalaureate and four years in the medical course. In 21 departments of universities the baccalaureate course is four years in length and the medical course three years in length. Forty three independent medical schools make an allowance of one year to graduates in arts and science of reputable colleges. In 28 medical schools less than seven years are required for both baccalaureate and professional degrees. Forty four do not give us satisfactory information on this subject.

In 79 medical schools an allowance of one year is also made to graduates in dentistry; in 78 to graduates in pharmacy; in 59 to graduates in veterinary medicine; in two to graduates in osteopathy; in 68 there is no evidence of any allowance in these classes.

It is my present opinion that the Regents should be somewhat elastic in registering college courses under the amended law. It should be sufficient for them to require that the college work be of such a character as will fit students for admission to advanced standing in medicine. It will be contended that only those schools that are wealthy enough to provide many courses from which candidates have the privilege of election within certain limits can admit to the second year in medicine without disorganizing their work, students with baccalaureate degrees representing only a broad training in Latin, French and German, physics, chemistry, biology and mathematics.

It may be that many schools now giving generally an allowance of one year to college graduates may be driven like Yale and the University of Pennsylvania to abandon this plan and to admit to the second year only such students as have covered satisfactorily the work embraced in the first medical year.

The great advance made in the medicine and surgery of today is not so much the result of better preparation by baccalaureate degree, and otherwise, as it is the realization of the necessity of

scientific investigation into the causes and treatment of disease, a class of medical work requiring largely a practical medical training. Investigation into the causes of disease has developed facts that are strictly medical, and, while these great discoveries have come largely from men who have had careful college preparation, yet it is also true that these great truths have emanated from a class of men working in small institutions, where one line of study was being carried out more particularly.

Finally, the subject as it is presented today emphasizes itself in this particular, that the fourth year work in the college granting the baccalaureate degree must more clearly coincide with that of the first of the four years course now required by nearly all of the medical colleges in the United States.

